

What Is Claimed Is:

1. A method of inspecting for defects comprising the steps of:
dividing illuminating light emitted by a light source into four beams;
applying the divided four beams to a sample to illuminate the sample through an objective lens;
composing the applied beams that have been reflected off said sample and passed through said objective lens into a composed beam of light;
causing the composed beam to form an image;
obtaining an image of said sample by detecting the composed beam which has formed the image; and
detecting defects of said sample by using the obtained image.
2. A method of inspecting for defects according to claim 1, wherein said illuminating light is divided into four beams by using a first birefringent prism and a second birefringent prism in such a way that the light emitted from said light source is divided into two beams by the first birefringent prism, and each of said divided two beams is further divided into two by the second birefringent prism.
3. A method of inspecting for defects according to claim 1, wherein the illuminating light is further applied obliquely to said sample from outside of said objective lens in the step of illuminating said sample.
4. A method of inspecting for defects according to claim 1, wherein, with respect to an electric field vector of said composed beam of light, an optical image is formed by reducing the amplitude of the light reflected of a flat portion of the sample in the step of obtaining said image.

5. A method of inspecting for defects comprising the steps of:
applying illuminating light corresponding to two or more diffraction directions of patterns formed on a sample so that major axes of elliptically polarized light have the same condition with respect to said sample;
forming an image by using a component of a polarized light vector in a particular direction in light reflected off said sample; and
detecting defects by using said image.

6. A method of inspecting for defects comprising the steps of:
illuminating a substrate having patterns formed on its surface with four polarized beams, through an objective lens, whose directions of electric field vectors are aligned;
imaging said substrate by forming an optical image on a sensor surface according to reflected light from said substrate which has entered said objective lens during the illumination; and
inspecting for defects on a surface of said substrate by processing the image obtained by the imaging.

7. A method of inspecting for defects according to claim 6, wherein an optical image is formed by adjusting the amount of zero-order light of the light reflected from said substrate and the directions of electric field vectors in said step of imaging.

8. A method of inspecting for defects comprising the steps of:
illuminating a sample with bright-field illuminating light and dark-field illuminating light through a polarized beam splitter;
imaging an optical image of said sample which is bright-field illuminated and dark-field illuminated; and

comparing the image of said sample obtained by the imaging with a reference image to detect defects of said sample, wherein distribution of the amount of light of said bright-field illumination and said dark-field illumination is adjusted according to the direction in which an electric field vector enters said polarized beam splitter.

9. A method of inspecting for defects according to claim 8, wherein the light used in the bright-field illumination and the light used in the dark-field illumination are emitted from the same light source in said illuminating step.

10. A method of inspecting for defects comprising the steps of:
illuminating a substrate having patterns formed on its surface;
imaging the illuminated substrate; and
inspecting for defects on a surface of said substrate by processing the image obtained by the imaging,
wherein, in said illuminating step, bright-field illumination and a combination of bright-field and dark-field illumination are switched for illuminating said substrate in accordance with a type of a pattern formed on the surface of said substrate.

11. A method of inspecting for defects according to claim 10, wherein said bright-field illumination used in said illuminating step is the one in which differential interference is available.

12. A method of inspecting for defects according to claim 10, wherein the light used in the bright-field illumination and the light used in the dark-field illumination are emitted from the same light source in said illuminating step.

13. An apparatus for inspecting for defects comprising:

a light source;

illuminating means illuminating a substrate having patterns formed thereon with light that has been emitted from the light source and divided into four beams;

image forming means for composing each of said four beams after being reflected off said substrate being illuminated by the illumination means and forming an optical image of said illuminated substrate;

image obtaining means detecting an optical image of said substrate as formed by the image forming means and obtaining an image of said substrate; and

defect detecting means processing the image obtained by the image obtaining means and detecting defects on said substrate.

14. An apparatus for inspecting for defects according to claim 13, wherein said illuminating means comprises two birefringent prisms, the light emitted from said light source is divided into two beams by one of the two birefringent prisms, and each of said two divided beams is further divided into two beams by the other birefringent prism.

15. An apparatus for inspecting for defects according to claim 13, wherein said illuminating means has a first polarization adjusting part adjusting the polarizing direction of the four divided beams illuminating said substrate, and said image forming means has a second polarization adjusting part adjusting the polarization direction of the beam made by composing each reflected light of said four beams from said substrate.

16. An apparatus for inspecting for defects according to claim 13

further comprising a branching means branching the light emitted from said light source, wherein one of the beams of light branched by the branching means is allowed to enter said illuminating means, and the other one of the beams of light is allowed to enter an oblique illuminating means illuminating said substrate obliquely.

17. An apparatus for inspecting for defects comprising:

a light source;

a branching means branching the light emitted from the light source into two optical paths;

a bright-field illuminating means illuminating a substrate having patterns formed on its surface with one of the beams of light branched by said branching means through an objective lens;

a dark-field illuminating means illuminating said substrate obliquely from outside of said objective lens with the other one of the beams of light branched by said branching means;

an image forming means forming an optical image of said substrate with the light reflected off said substrate illuminated by said bright-field illuminating means and said dark-field illuminating means and passing through said objective lens;

an image obtaining means obtaining an image of said substrate by detecting an optical image of said substrate formed by the image forming means; and

a defect detecting means processing the image obtained by the image obtaining means and detecting defects on said substrate.

18. An apparatus for inspecting for defects according to claim 17, wherein said bright-field illuminating means comprises a beam dividing part

dividing the light branched by said branching means into four beams.

19. An apparatus for inspecting for defects according to claim 17, wherein said bright-field illuminating means comprises a first polarizing adjusting part adjusting a polarizing direction of the light branched by said branching means and said image forming means comprises a second polarizing adjusting part adjusting a polarizing direction of the light reflected of f said substrate illuminated by said bright-field illuminating means and said dark-field illuminating means and passing through said objective lens.